

Data of DNA and related for 60 years reused to develop new theory and hypothesis

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We experimentalists often like to use our own, particularly new experimental data to develop new hypothesis. Here we report that several theories or hypotheses have been developed with some of the published DNA and related data in molecular biology over the past 60 years. Dr. Erwin Chargaff discovered the base pair principle of AT and CG. Later Dr. James Watson and Dr. Francis Crick critically discovered the correct positions of the paired bases - AT and CG in DNA double helix form in 1953. Recently we have identified: 1. AT or CG can be read as single bit of genetic information on double stranded (ds) DNA. (If ds RNA, U may replace T). TA is in the opposite direction of AT, and GC is in the opposite direction of CG. We also identified that DNA or RNA may be read at ds level. At ds level, AT and TA are the same molecule but with only opposite orientations. So are the CG and GC. Therefore they are considered as two bits of unit of information; 2. A ds DNA may be paired with a ds RNA for specific recognition of genetic information. This model may be used to explain a mystery of long time that proteins always have trouble to specifically recognize genetic information on the DNA. Please refer for more details to the web page, < <http://www.energinity.com/2011proceedings1.pdf> >; 3. From genotype to phenotype (DNA → RNA → Protein), a well-accepted central dogma of molecular biology, may be amended. With published extensive data, we have developed a complement – from phenotype to genotype to phenotype:

Protein → RNA → DNA → RNA → Protein, through processes we called:

transduction → transtruction → replication → transcription → translation, respectively.

Transtruction is a term to define genome reorganization before replication. For more details please refer to the web page, < <http://www.energinity.com/2010proceedings1.pdf> >; 4. DNA determination principle and published numerous data may be used to study the mechanism of consciousness. We have proposed a theory - DNA defines consciousness. This theory has led to heated debate. For more details please refer to the web page, <

<http://www.energinity.com/2012proceedings1.pdf> >; 5. That Dr. Sydney Brenner advocated theoretic biology in the turn of this new millennium (Phil. Trans. R. Soc. Lond. B 1999) may be further appreciated and we propose additional framework systematically.

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Big questions and humble approaches

Following up a discussion with Dr. Walter Gilbert at Cold Spring Harbor Laboratory during the conference of celebrating the 60th anniversary of the discovery of DNA double helix

Chun Yang, M.D.

Abstract:

In this book, I have reported my fairly long discussion with Dr. Walter Gilbert, a brief chat with Dr. James D. Watson, and some further studies on my academic genealogy related to both of them. I have claimed that I am among the “third generation”, and also exclusively, I share what Dr. Watson has told me – “We are all one generation.” In the same time, I also take a defensive approach, as I have done since January of this year on my website - to rethink Dr. Watson as a hero of promoting women in science and working hard to transform some problems of our society with science, which is against the currently unfavorable image of him both in the general public and in the media of mainstream science. I truly appreciate senior generation’s pioneer achievements and their role models. I comment that big questions in science and beyond differ from decade to decade among different generations. I have summarized some of my recent work, such as: RNA’s new possible roles in genetic information transfer that I have called a major categorical pathway of signal transduction - Protein to RNA; and Genome reorganization before replication - I have used a term DNA transtruction to describe it; The consequentially proposed complement of central dogma, a cyclic model of Protein – RNA – DNA – RNA – Protein; The reversal mechanism of Protein to RNA, RNA to Protein is concluded in ribosome for the mechanism of protein folding, and etcetera, which I have published on my website over the past several years. I have sought comment from Dr. Gilbert and provided further argument for my theories. I explain the writing style of my recent research. I have turned a theorist while I am still an experimentalist. I concern the evaluation of my credentials and the impact of my work. How I have met challenges and taken opportunities in my professional career is also outlined - I realize that I have been also leading a career of scientist in two ways, science and social change. I am following some scientists who have engaged the similar. For examples, the late Dr. Linus Pauling was a role model not only as a scientist but also as an important world peace maker, and there are currently women scientists, e. g. Dr. Nancy Hopkins, who has worked with others to change the gender inequality in science. I strive that we younger generations are working together with all generations to accomplish further. I have studied both cases - the Watson controversy and endurance as well as my own case of being bullied in an academic environment at Harvard. My own case has demonstrated a far from healthy and unresolved one. Although scientific research continues to be my main focus, I also place a direct social change as high priority. Hence, I have proposed “Watson program for science and civilization”. I advocate that we work collectively and systematically so that we can lead both immediately as well as sustained scientific and social transformations.

(For the book, *Big and Humble*, by Chun Yang, M.D., 2013)

A Science of Research Integrity (SRI)

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Abstract

We propose a new scientific discipline - the science of research integrity (SRI) with some further thoughts [1][2]. Science has been among many ways to discover truth. Science can discover truth about values, such as moral sense, although traditionally science has been considered neutral without morality. Just as the study of religion is recently considered a new science [3], so is the study of the mechanism for science integrity that can be developed as new science. What actually defines SRI? What are the theoretical principles and practical rules defined by SRI? How to develop SRI systematically? How to integrate the whole body of data that has studied research integrity throughout the history of science? These are among the questions that SRI addresses. Science community is an organic body. It suffers from illness, like a human being. Positive energy – good conduct of research strengthens science. Negative energy – research misconduct fails science. Both its thriving and suffering can directly impact its composing individuals' health. SRI, therefore, needs the tending of every scientist. Professionals can specialize in this field after training by well-developed teaching institute or program, though there is none currently. Whistleblowers may be trained as specialists for transformations. SRI related legal and justice procedures should be detailed. We use medical science including health science as analogous approach to define SRI, or simply a new branch of medicine in addition to its traditional location of ethics. Cases of eu-conduct or misconduct can be detailed with the identification of their mechanisms, the diagnoses of defined problems or newly defined issues, the treatment, the preventive measures and etc. Misconduct in science may have been existed soon as the science itself was birthed. In the past, the integrity issue may have been addressed without dealing with fundamental issues. Recently vigorous addresses of research integrity may have stimulated the further development of SRI.

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¹ SRI as a term has been presented at least as early as 2001. See the "*Office of Research Integrity ANNUAL REPORT 2001*" by Department of Health and Human Services, Office of the Secretary, and Office of Public Health and Science, USA. 2002. Page 36 and 39. < http://ori.hhs.gov/images/ddblock/ori_annual_report_2001.pdf >

² I have an elaboration last year on SRI. See "A science of research integrity – At Harvard an ethics case is in developing: my confrontation against misconduct". 2012. < [http://energinity.com/HarvardCasePt4\[1\].pdf](http://energinity.com/HarvardCasePt4[1].pdf) >

³ I have proposed "faith science" in 2008; a mainstream journal "*New Scientist*" published "the surprising new science of religion" in 2012. < <http://www.energinity.com/fsunews1.html> >

Confronting misconduct at top institution – what are right things to do

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Abstract: The year of 2012 is particular for the science community to focus on research misconduct, as advocated by peer reviewed journals, “Time to act” (*BMJ*, January 4, 2012) and “Time is right to confront misconduct” (*Nature*, August 2, 2012). Are top institutions really ready to confront misconduct? The author confronted misconduct at one of the high influential institutions in the United States once in May and once in June of 2012. The report here is not a survey of multiple cases of research misconduct, unlike the majority of peer reviewed papers. The author reports an in depth studying of confronting misconduct, a single case of many years, which may provide more details and unique properties that a group survey may be unable to cover, and which is the author’s personal witnesses of the violating of common ethics code by two senior professors. This case is then complicated with two additional findings, twenty five years of dishonesty by one senior professor in peer reviewed publications etc., and thirty years of dishonesty by another senior professor in grant applications, research presentations, bio sketch and etc. This case is also a live one – it is actually still in developing. Criminal issues of perjury have also emerged. Moreover, dramatic event may happen anytime - the institution continues to ignore the more important issues and lead the case heading in wrong direction by common standard. The author presents clear cut facts from the case for comment, discussion, debate and learning. The author believes that the institute should handle the case in a right direction. This case may reflect a worldly problematic culture in academia – world leaders may have been trained inappropriately. It, therefore, can be transformational. The detailed true story from the author’s account is unpublished, but made links available on request.

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